Tracks and Other Signs

Objective

Students will identify common animal tracks and other signs for the black bear.

Method

Students make plaster casts of animal tracks. Students will investigate other signs indicating presence of black bear.

California Standards

Science: Life Science 3 b; Investigation 6 a, c.

Materials

Casting plaster, containers for mixing, spray shellac or plastic, petroleum jelly, milk cartons or plastic 2-liter soda bottles, cardboard, knives, sandpaper, black ink or paint, activity pages, sample kit (with bear scat, claws, and tracks), and (optional) loops of wire

Background

Looking for evidence of wildlife is one method of determining what animal species live in a certain area. Signs of wildlife such as burrows, nests, droppings (scat), or food litter can be seen and identified, but some of the easiest signs to interpret are animal tracks.

Animal tracks can be the basis for several types of investigations. The students can develop an animal species list by the tracks found in the region. Wildlife population estimates can be made by observing the number of tracks found during a specified length of time. Habitat requirements of certain species can be determined by finding their tracks in certain areas and not finding them in others.

Track hunting is an easily acquired skill. Find a spot of level ground with fairly soft, fine, textured soil. Smooth the soil over with your hand; after several days, return to the spot to see what animals have been there. The best places to look for animal life are near water or on well-worn trails. Larger animals will use the more open areas, while a small spot the size of your hand cleared under some bushes will reveal tracks of mice, shrews, and various reptiles.

Tracks can be preserved and collected by making plaster casts. Once the tracks have been observed or preserved, the animal that made them can be identified. For example, all mammals have basically the same foot structure but they use the parts of the foot in different ways. For instance, compare an animal's foot in relation to the human hand. Some animals walk on their hands like raccoons and bears. Others walk or run on their toes like cats and coyotes, while some animals walk on their toenails or hooves like deer and elk.

If students look at a track, they can determine how that animal gets around. With this information, a student can also study what part of the foot the animal walks on, whether claws are present and how many steps are taken in a measured distance.

Procedure

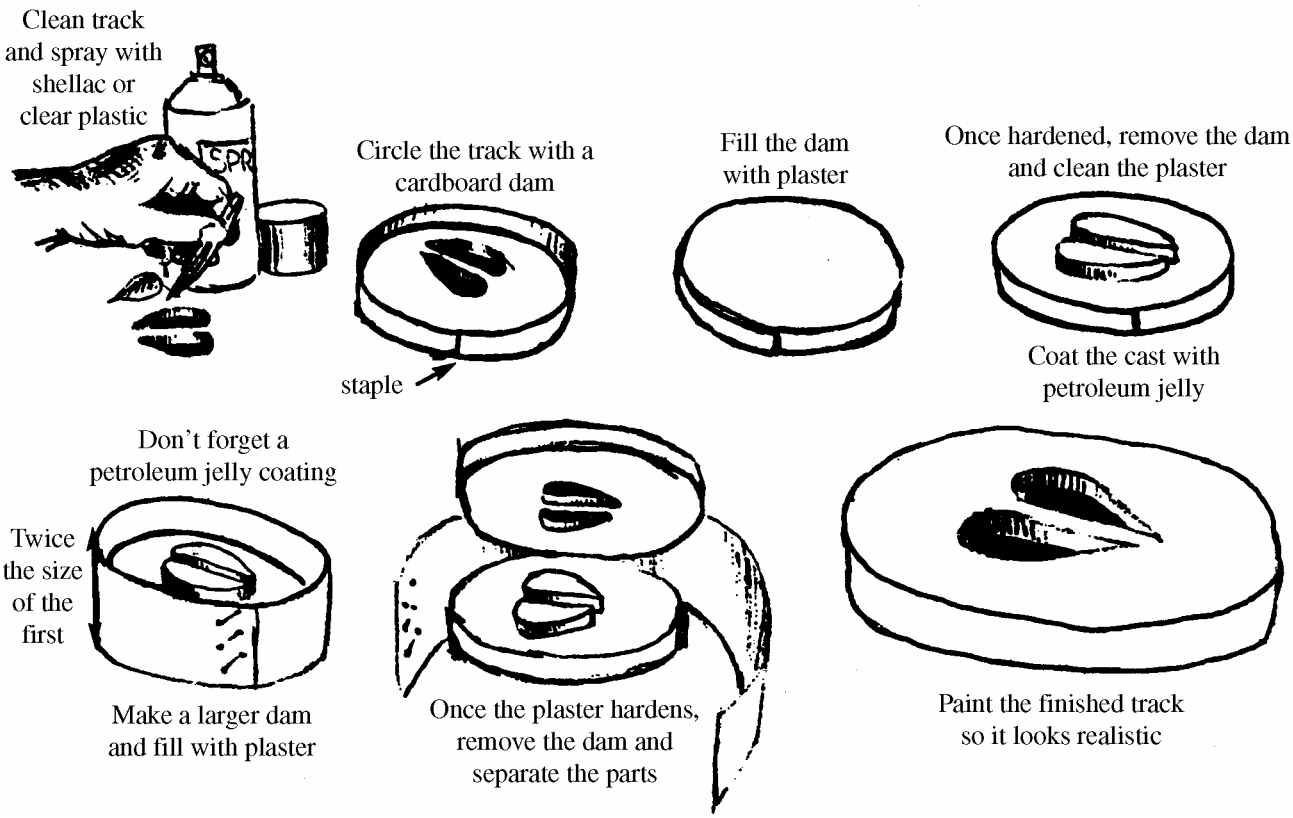
PART A ***Looking for a Bear***

1. Discuss how students can determine the presence of a black bear. Other than bear sightings what can students look for to indicate a bear has been in the area.
2. Have students view the pictures of bear signs. Allow students to view the bear claws, scat, and tracks from the kit.

Claw marks are usually found on old or dead trees about 7 to 8 feet off the ground. These marks are too high off the ground for other animals to make and the individual marks are visible. These marks may be a signal to other bears, like marking a territory. Bears also strip tree bark to eat.

Bear scat is included in the sample kit. The size, shape and contents help distinguish bear scat. Bears have a poor digestive system; much of what they eat goes through their digestive track intact. How do you know if this is a recent bear sign? If the scat is fresh, it will be moist. Examination of the scat will provide information about what the bear has been eating.

Rolled rocks, diggings, pulled vegetation, and torn apart logs are signs of bears in search of food. Under rocks and in old logs or stumps bears find insects that are important to their diet. Bears use



their claws to dig for small rodents and plant roots or bulbs.

Tracks of bears have five toes and usually show claws.

PART B ***Preserving Tracks***

1. Take a class or group on a field trip to an area where there will be a variety of signs including tracks: a nearby lake, stream, or wildlife refuge area. NOTE: If a field trip is not possible, use the track prints in the kit. This track print can be imprinted into a box of sand or other loose soil type and filled with plaster.
2. Divide students into small groups to find tracks. Students may look for various animal tracks rather than focusing only on bears. Divide them into groups according to areas where they will look for tracks: one group under bushes, one group at a meadow's edge, one group near a pond's edge. Prepare the students to look carefully and responsibly.
3. Once a track is found, clean it of loose particles of soil, twigs, leaves, and other litter.
4. Spray the track with shellac or plastic sealant from a pressurized can to seal the track.
5. Form a two-inch wide strip of cardboard into a ring surrounding the track. Press the cardboard ring firmly into the ground to give support, leaving at least one inch above ground to mold for the plaster. One of the easiest ways to make the mold is to cut plastic two-liter soda bottles or paper milk cartons in half. Cut the top and bottom from a tuna or cat food can or a plastic margarine tub to make simple round molds. Stapled strips of cardboard in the shape of a circle can also be used.
6. Mix about two cups of plaster in a container, adding water slowly until it is about as thick as heavy cream. Carefully pour the mixture into the mold until the plaster is almost to the top. Allow the plaster to harden at least 15 minutes before lifting it out of the track. If the soil is damp, the plaster may take longer to harden.
7. When the cast is hard, lift it out and remove the ring. Clean the cast by scraping it with a knife blade or toothbrush and wash.
8. To make a reverse image of the track, apply a thin coating of petroleum jelly to the track and surface of the cast. Place the animal cast on a flat surface and surround the cast with a two-inch strip of cardboard as before. The original cast now becomes the mold.
9. Mix the plaster and pour it into the mold, making certain that the top surface of the casting is smooth and level with the mold. If

you plan to use the casting as a wall plaque, place a loop of wire in back of the casting while the plaster is still soft. Allow two hours for the plaster to harden. Discuss different ways of recording animal tracks (photos, drawing, plaster, and so forth).

10. Carefully remove the mold when the plaster is dry. Separate the two layers, and wipe the excess petroleum jelly from the face of the cast and track. Scrape any rough places with a knife blade, or use fine sandpaper to smooth the surface. Wash the completed cast with water.
11. When the cast is thoroughly dry, paint the inside of the track with India ink or black poster paint. Label each cast with the name of the track and the student's name. A coat of clear shellac or clear plastic may be applied to protect and preserve the casting

Extensions

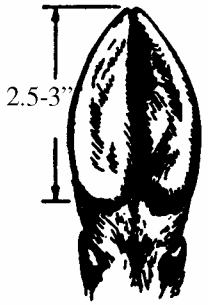
1. In a sandy area, have the students move their bodies in different ways such as walking, running, and jumping. Compare the differences between sets of tracks made by the same student doing each movement. Evaluate how speed, directional changes, and other variations in travel alter the tracks.
2. Write a wildlife story through the use of appropriate tracks. As a variation, make up a "track story" and have others guess what happened in the story.

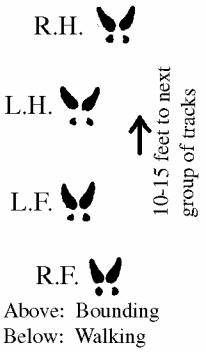
Evaluation

1. Have the students group the tracks and discuss how characteristics indicate the lifestyle and size of the animal. Students could summarize verbally or in writing their discussion of the tracks and could make predictions for other animals in the same group and in different groups.
2. What is the advantage of using plaster casts versus photography to study and preserve animal tracks?
3. What are the advantages and disadvantages of the plaster medium?
4. Draw and label tracks of animals common to your area.
5. How would the knowledge about animal tracks and tracking help the following people: a biologist studying bears, a wildlife photographer interested in a variety of animals, and a shepherd with a flock of sheep? What kinds of things would they need to know about animal tracks to do their jobs?

Looking for Tracks

Deer

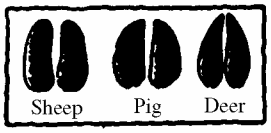




Above: Bounding
Below: Walking

Footprint of running deer showing spread toes and imprint of dewclaws

16-20"



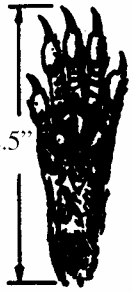
Grey Squirrel

Front Foot

Spacing and arrangement of footprints are variable in walking tracks

Above: Walking
Below: Running

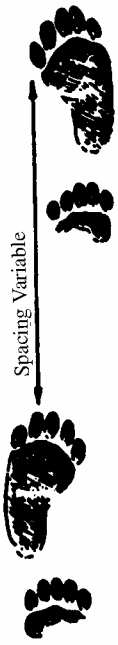
Hind Foot



In Running front feet are placed side by side, not one ahead of the other as with the rabbit.

Black Bear

Right Hind Foot



Claws seldom show in tracks

Right Front Foot

Cottontail Rabbit

Front Foot

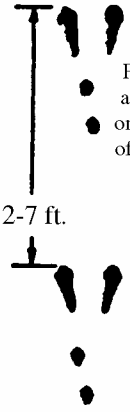
Feet heavily furred, toes indistinct in tracks

Hind Foot

Above: Hopping
Below: Bounding

Front feet are placed one in front of the other

2-7 ft.



Source: J. J. Shomon, reprinted from *Virginia Wildlife Magazine*

Looking for Signs

TORN LOGS can mean a bear was looking for high protein grubs and ants, which are important to its diet. Like a dog chews on a bone to get the nutrient rich meat within, a bear will tear apart a log to find these insects.

SCAT from a bear is often larger than most other animals. Bears have poor digestive systems; so much of what they eat comes through intact

Above, hind paw; below, front paw.

CLAW MARKS on a tree approximately 7-8 feet off the ground may have been left by a bear that stripped away bark to eat tree pulp.

BEAR TRAILS may be found on hillsides covered with trees; this is bear habitat.

ROLLED ROCKS may be a sign that a bear was searching for insects underneath. (mmm…protein!).

DIGGING for rodents and beehives is an exerting activity for bears to find meat.

DIGGING for bulbs and roots provides carbohydrates and quick energy for a bear. Bulbs are the most nutritious part of a plant and are especially high in nutrients just before the plant blooms.